

REMARKS**I. Possible Double Patenting**

The possible double patenting rejection of claims 5 and 7 has been obviated by their cancellation.

However if claims 5 and 7 had not been canceled and claim 5 had been found to contain allowable subject matter, claims 5 and 7 would not contain duplicate subject matter. The "time recursive interpolation filter" of canceled claim 7 is the entire device shown in fig. 3 (see the caption for fig. 3 and the paragraph extending from page 8, line 20 to page 9, line 2, of the specification). The interpolation stage 5, which only performs a limited spatial interpolation, is only one stage or part of the interpolation filter (TRI) shown in fig.3.

II. Enablement Rejection

Claims 1 to 7 were rejected under 35 U.S.C. 112, first paragraph, for lack of an enabling description regarding how to make and/use the claimed device and how to perform the claimed method.

The interpolation device (TRI) of fig. 3 is built into the prior art device for motion-compensated prediction of moving images or pictures shown in fig. 1. This clear statement regarding how to make the claimed device appears on page 8, lines 15 to 19, of the applicants' specification. In other words, the TRI of fig. 3 becomes part of the device shown in fig. 1.

Additional details regarding the prior art device that one starts with to obtain the claimed invention are described in applicants' background section on page 2 to 4. Further details of the prior art method are described in ISO/IEC 14496-2, "Final Draft International Standard of MPEG-4", Atlantic City, October 1998, MPEG98/N2502. This reference was filed with an IDS.

Since the device of fig. 1 is prior art and is well documented, referenced and explained in applicants' disclosure, it should need no further explanation. It is well established that features of a device or method that are well known in the prior art are better omitted from the disclosure of a patent specification. For example, the Federal Circuit Court of Appeals has said:

"A patent need not teach, and preferably omits, what is well known in the art". *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q. 81(Fed. Cir. 1986).

See also M.P.E.P. 2164.05 (a).

The invention is a combination of the prior art moving picture motion-predicting device of fig. 1 and the TRI filter of fig. 3 (device claims 10 to 12) or their underlying operating processes (process claims 8 and 9). The invention provides an improved picture signal in which aliasing errors are corrected. The basic assumptions on which the inventive process and device rest as well as an explanation of how aliasing is corrected according to the invention are provided on page 6, line 4 to page 7, line 13. The problem of aliasing is also explained in the references mentioned in the paragraph running from page 3 to page 4 of applicants' specification.

The TFI filter of fig. 3 has some parts that perform similar functions as parts in the prior art device shown in fig. 1. These parts are the motion compensation MC and image data memory z^{-1} in fig. 1 and the motion compensation 4 and image data memory z^{-1} of fig. 3.

The specification states that the source of the motion vector $L^*(d-1)$ is the motion estimation block ME. The production of the motion vector $d(t)$ is explained on page 2, lines 15 to 22, of the applicants' specification. L is the factor by which the resolution is increased, as explained on page 9, line 21, to page 10, line 2. This factor is the same as the factor L, which is used in the expander 1 of fig. 3 to insert marker values m in the reference image signal. In other words, the TFI filter uses the signal from the motion estimation block of fig. 1, and is integrated in the combined device with the blocks MC and the z^{-1} . Naturally there may be some variation in the manner in which the components are connected within the scope of various embodiments of the claimed invention.

The test of whether or not a disclosure provides sufficient enablement is not however whether or not a complete detailed working example is described (see M.P.E.P. 2164.02). It is true that a figure showing a complete example of the combination of the TFI filter with the prior art device of figure 1 has not been shown. This type of combined figure would in fact constitute a figure showing a working example. The M.P.E.P. (2164.02) however states that an absence of such a working example or figure should not necessarily result in a finding that the disclosure is not enabling.

The test of enablement is whether or not one skilled in the art would require undue experimentation to make and/or use the claimed invention (M.P.E.P. 2164.01). It is respectfully submitted that the disclosure in applicants' specification is sufficient for one skilled in the art to make various embodiments of the claimed invention. The key element is the time recursive interpolation (TFI) filter as shown in fig. 3 and claimed in new device claim 10, especially with the merge means 3 (not MC means 4 which is old in the art). However this TFI filter may be integrated in the prior art device of fig. 1 in comparatively few ways.

As a guideline for what constitutes "undue experimentation" the Federal Circuit has found that complexity of experimentation is not necessarily equivalent to undue experimentation. Also M.P.E.P. 2164.06 provides some additional guidelines. Reasonable, not undue, experimentation was found to comprise an expenditure of about \$50,000 and 6 to 12 months work. It should be clear that such experimental expense and effort would not be required to connect the TFI filter with the prior art device of fig. 1. This is especially true since the disclosure states that the source of the motion vector $d(t-1)$ is certainly the ME block in the prior art, which also must be supplied with the past picture signal from the memory 2 in the TFI filter (see page 9, line 19 to 23) in order to provide the motion vector based on past image data.

In addition it should be noted that new independent claim 8 is a combination of the subject matter of canceled claims 1 and 2 with modifications to correct formal deficiencies. Also new dependent claim 9 is based on canceled

claim 3 but is somewhat different because of modifications based on disclosures in the specification. New independent device claim 10 includes subject matter from canceled claim 4 and additional information regarding the functions performed by the "means" components based on the process claims 1 and 2 and disclosures in the specification on pages 8 and following. New dependent claims 11 and 12 are based on canceled claims 5 and 6, but are worded somewhat differently and thus include modified features. No claim has been filed similar to claim 7.

For the foregoing reasons and because of the changes in the claim wording it is respectfully submitted that **none** of the new claims 8 to 12 should be rejected under 35 U.S.C. 112, first paragraph, for lack of enablement.

III. Rejection Based on Hoang, U.S. patent 6,295,089

Claims 1 to 5 were rejected as anticipated under 35 U.S.C. 102 (e) based on Hoang.

Claim 6 was rejected as obvious under 35 U.S.C. 103 (a) from the disclosures in Hoang.

Claims 1 to 6 have been canceled, obviating their rejection on these grounds. However new process claims 8 and 9 include features from process claims 1 to 3 and new device claims 10 to 12 include wording from canceled claims as 4 to 7.

Hoang discloses a method of decoding an MPEG video signal including decoding a video picture signal coded by spacial- transform encoded blocks of

digital pixel data to form a decoded picture at an initial resolution; upsampling to a higher resolution by interpolating additional pixels of data at intervening position between the original pixel positions; storing this upsampled video digital signal in a buffer memory and then producing a motion compensated MPEG video signal at the higher resolution by copying interpolated additional pixels of data from the additional positions of the stored reference picture (see figs. 4 and 5 of this reference).

Hoang does include an interpolation stage in which a local interpolation similar to the interpolator 5 of fig. 3 is performed to obtain higher resolution in the predicted signal. Subsequently to this interpolation the motion-compensated picture signal is produced from the result of the upsampling or interpolation, as shown in figs. 1 and 2 and in the discussion related to those figures. The device labeled 23 is a frame buffer for past image data, but the device 24 is not a merging module 4 equivalent of the applicants' merging module, but is simply the motion-compensation producing block. This device 24 is clearly not a merging device because only a single interpolated signal is input as shown in fig. 3 of the reference.

The method of Hoang does not include a time recursive interpolation. This reference does not disclose or suggest the features of the merging step c) of new claim 8 in which marker values (m) inserted at intervening points between image points of the reference picture ($s'(t-1)$) to form an intermediate picture are replaced with image point information of the motion-compensated picture signal ($s_{tri}(t-1)$) from the motion-compensation block. A spatial interpolation is

subsequently performed in applicants' method by block 5 on the resulting signal from the merge block 3 (claim 9 above).

The Hoang reference does not disclose or suggest steps b) and c) of method claim 8. Similarly Hoang's device shown in Fig. 3 does not disclose or suggest the merging module 4 for performing this function.

Since these latter features are not disclosed in Hoang, Hoang cannot anticipate the new process claim 8 and device claim 10 and the dependent claims. See M.P.E.P. 2131.

Furthermore the new claims 8 and 10 do not include subject matter that is obvious under 35 U.S.C. 103 (a) from the Hoang reference.

It is well established by many U. S. Court decisions that to reject a claimed invention under 35 U.S.C. 103 there must be some hint or suggestion in the prior art of the modifications of the disclosure in a prior art reference or references used to reject the claimed invention, which are necessary to arrive at the claimed invention. For example, the Court of Appeals for the Federal Circuit has said:

"Rather, to establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant...Even when obviousness is based on a single reference there must be a showing of a suggestion of motivation to modify the teachings of that reference.."*In re Kotzab*, 55 U.S.P.Q. 2nd 1313 (Fed. Cir. 2000). See also M.P.E.P. 2141

The modifications of the disclosures of Huang necessary to arrive at a device including the merging module 4 and a process including the functions

performed by it are not suggested by Hoang or the prior art in general. The applicants' method and device for correcting a predicted moving picture signal for aliasing errors are neither disclosed nor suggested by Hoang.

As far as the subject matter of canceled claim 6, now in new claim 12, goes, it is not currently being relied on to distinguish the claimed subject matter from the disclosures of Hoang. However the subject matter "as a whole" claimed by new claim 12 is clearly not obvious from Hoang.

It is respectfully submitted that **none** of new claims 8 to 12 should be rejected as anticipated under 35 U.S.C. 102 (e) by Hoang or obvious under 35 U.S.C. 103 (a) over Hoang.

IV. Specification

Some minor typographical errors have been corrected in a specification paragraph.

V. Information Disclosure Statement

Applicant wishes to note that two Information Disclosure Statements have been filed which do not appear to have been acknowledged by the Examiner.

The first Information Disclosure Statement was filed on May 18, 2001, simultaneously with the filing of this application, and a related foreign patent and two articles mentioned in the specification of the application.

The second Information Disclosure Statement was filed on July 19, 2001

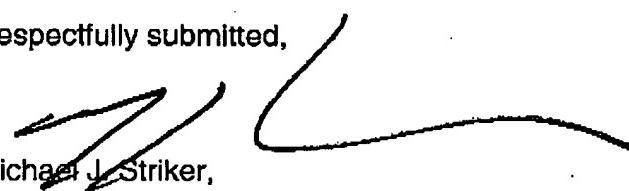
and related to prior art located in a foreign search report.

Consideration of both of these Information Disclosure Statements and issuance of an initialed PTO 1449 form is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



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